

In re Patent Application of:
CAWOOD ET AL.
Serial No. 10/781,317
Filed: FEBRUARY 18, 2004

In the Claims:

1. (Currently amended) An electrical connector for at least one electrical cable end comprising a conductor and an insulating jacket thereover, the electrical connector comprising:

a conductive body having at least one conductor receiving passageway therein to receive the conductor of the at least one cable end, said conductive body also having at least one fastener receiving passageway intersecting the at least one conductor receiving passageway;

at least one fastener positioned in the at least one fastener receiving passageway for securing the conductor within the at least one conductor receiving passageway; and

at least one insulating boot associated with said at least one conductor receiving passageway and comprising

an insulating tube having an open proximal end received onto said conductive body, said insulating tube comprising a continuous sidewall, and

at least one rupturable seal closing said insulating tube and rupturing upon initial insertion of the cable end therethrough,

said at least one rupturable seal also being compliant to accommodate different sized cable ends and form a seal with adjacent portions of the cable end.

2. (Original) An electrical connector according to Claim 1 wherein said at least one rupturable seal comprises a layer having a plurality of radially oriented lines of weakness therein.

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3. (Original) An electrical connector according to Claim 1 wherein said at least one rupturable seal comprises a layer having a plurality of successive concentric rings of weakness therein.

4. (Original) An electrical connector according to Claim 1 wherein said at least one rupturable seal comprises a layer being puncturable and having a percentage elongation to yield of not less than about 300 percent.

5. (Currently amended) An electrical connector according to Claim 1 wherein said at least one rupturable seal is more compliant than the continuous sidewall of said insulating tube.

6. (Original) An electrical connector according to Claim 1 wherein said at least one insulating boot comprises a thermoplastic elastomer.

7. (Original) An electrical connector according to Claim 1 wherein said at least one insulating boot further comprises an elastic body contained within said insulating tube for urging said at least one rupturable seal radially inward.

8. (Original) An electrical connector according to Claim 1 wherein said at least one insulating boot further comprises a sealant material within said insulating tube.

9. (Original) An electrical connector according to

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Claim 1 wherein said at least one insulating boot further comprises a lubricant within said insulating tube.

10. (Original) An electrical connector according to Claim 1 wherein said at least one rupturable seal comprises a first rupturable seal at a distal end of said insulating tube, and a second rupturable seal at a medial portion of said insulating tube.

11. (Currently amended) An electrical connector according to Claim 10 wherein said first rupturable seal comprises a first rupturable seal connected to the distal end of said insulating tube; and wherein said second rupturable seal comprises a second rupturable seal integrally molded with the continuous sidewall of said insulating tube.

12. (Original) An electrical connector according to Claim 10 wherein said insulating boot further comprises a sealant material between the first and second rupturable seals.

13. (Currently amended) An electrical connector according to Claim 1 wherein said insulating tube further comprises a series of gripping rings on an interior of the open proximal end thereof.

14. (Currently amended) An electrical connector for at least one electrical cable end comprising a conductor and an insulating jacket thereover, the electrical connector comprising:

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a conductive body having at least one conductor receiving passageway therein to receive the conductor of the at least one cable end; and

at least one insulating boot associated with said at least one conductor receiving passageway and comprising

an insulating tube having [[a]] an open proximal end [[adjacent]] received onto said conductive body, a distal end opposite the proximal end, and a medial portion between the proximal and distal ends, said insulating tube comprising a continuous sidewall,

a first seal at [[a]] the distal end of said insulating tube and being penetrable upon insertion of the cable end therethrough,

a second seal at the medial portion of said insulating tube and being penetrable upon insertion of the cable end therethrough, and

said first and second seals being compliant to accommodate different sized cable ends and form respective seals with adjacent portions of the cable end.

15. (Original) An electrical connector according to Claim 14 wherein at least one of said first and second seals comprises a rupturable seal for initially closing said insulating tube.

16. (Original) An electrical connector according to Claim 14 wherein at least one of said first and second seals comprises a layer having a plurality of radially oriented lines of weakness therein.

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17. (Original) An electrical connector according to Claim 14 wherein at least one of said first and second seals comprises a layer having a plurality of successive concentric rings of weakness therein.

18. (Original) An electrical connector according to Claim 14 wherein at least one of said first and second seals comprises a layer being puncturable and having a percentage elongation to yield of not less than about 300 percent.

19. (Currently amended) An electrical connector according to Claim 14 wherein at least one of said first and second seals is more compliant than the continuous sidewall of said insulating tube.

20. (Original) An electrical connector according to Claim 14 wherein said at least one insulating boot comprises a thermoplastic elastomer.

21. (Currently amended) An electrical connector according to Claim 14 wherein said first seal comprises a first seal connected to the distal end of said insulating tube; and wherein said second seal comprises a second seal integrally molded with the continuous sidewall of said insulating tube.

22. (Original) An electrical connector according to Claim 14 wherein said at least one insulating boot further comprises an elastic body contained within said insulating

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tube for urging at least one of said first and second seals radially inward.

23. (Original) An electrical connector according to Claim 14 wherein said at least one insulating boot further comprises a sealant material within said insulating tube and between said first and second seals.

24. (Original) An electrical connector according to Claim 14 wherein said at least one insulating boot further comprises a lubricant within said insulating tube.

25. (Currently amended) An electrical connector according to Claim 14 wherein said insulating tube further comprises a series of gripping rings on an interior of the open proximal end thereof.

26. (Original) An electrical connector according to Claim 14 wherein said conductive body also has at least one fastener receiving passageway intersecting the at least one conductor receiving passageway; and further comprising at least one fastener positioned in the at least one fastener receiving passageway for securing the conductor within the at least one conductor-receiving passageway.

27. (Currently amended) An insulating boot for an electrical connector comprising a conductive body having at least one conductor receiving passageway therein to receive a conductor of at least one cable end, the insulating boot comprising:

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an insulating tube having [[a]] an open proximal end to be [[positioned adjacent]] received onto the conductive body, a distal end opposite the proximal end, and a medial portion between the proximal and distal ends, said insulating tube comprising a continuous sidewall;

a first seal at the distal end of said insulating tube and being penetrable upon insertion of the cable end therethrough; and

a second seal at the medial portion of said insulating tube and being penetrable upon insertion of the cable end therethrough;

said first and second seals being compliant to accommodate different sized cable ends and form respective seals with adjacent portions of the cable end.

28. (Original) An insulating boot according to Claim 27 wherein at least one of said first and second seals comprises a rupturable seal for initially closing said insulating tube.

29. (Original) An insulating boot according to Claim 27 wherein at least one of said first and second seals comprises a layer having a plurality of radially oriented lines of weakness therein.

30. (Original) An insulating boot according to Claim 27 wherein at least one of said first and second seals comprises a layer having a plurality of successive concentric rings of weakness therein.

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31. (Original) An insulating boot according to Claim 27 wherein at least one of said first and second seals comprises a layer being puncturable and having a percentage elongation to yield of not less than about 300 percent.

32. (Currently amended) An insulating boot according to Claim 27 wherein at least one of said first and second seals is more compliant than the continuous sidewall of said insulating tube.

33. (Original) An insulating boot according to Claim 27 wherein at least one of said first and second seals and said insulating tube comprises a thermoplastic elastomer.

34. (Currently amended) An insulating boot according to Claim 27 wherein said first seal comprises a first seal connected to the distal end of said insulating tube; and wherein said second seal comprises a second seal integrally molded with the continuous sidewall of said insulating tube.

35. (Original) An insulating boot according to Claim 27 further comprising an elastic body contained within said insulating tube for urging at least one of said first and second seals radially inward.

36. (Original) An insulating boot according to Claim 27 further comprising a sealant material within said insulating tube and between said first and second seals.

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37. (Original) An insulating boot according to Claim 27 further comprising a lubricant within said insulating tube.

38. (Currently amended) An insulating boot according to Claim 27 wherein said insulating tube further comprises a series of gripping rings on an interior of the open proximal end thereof.

39. (Currently amended) An insulating boot for an electrical connector comprising a conductive body having at least one conductor receiving passageway therein to receive a conductor of at least one cable end, the insulating boot comprising:

an insulating tube having ~~[[a]]~~ an open proximal end to be ~~[[positioned adjacent]]~~ received onto the conductive body, a distal end opposite the proximal end, and a medial portion between the proximal and distal ends, said insulating tube comprising a continuous sidewall;

a first seal connected to the distal end of said insulating tube and being penetrable upon insertion of the cable end therethrough, said first seal being more compliant than the continuous sidewall of said insulating tube; and

a second seal being integrally formed with the continuous sidewall of said insulating tube at the medial portion thereof and being penetrable upon insertion of the cable end therethrough.

40. (Original) An insulating boot according to Claim 39 wherein at least one of said first and second seals

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comprises a rupturable seal for initially closing said insulating tube.

41. (Original) An insulating boot according to Claim 39 wherein at least one of said first and second seals comprises a layer having a plurality of radially oriented lines of weakness therein.

42. (Original) An insulating boot according to Claim 39 wherein at least one of said first and second seals comprises a layer having a plurality of successive concentric rings of weakness therein.

43. (Original) An insulating boot according to Claim 39 wherein at least one of said first and second seals comprises a layer being puncturable and having a percentage elongation to yield of not less than about 300 percent.

44. (Original) An insulating boot according to Claim 39 wherein at least one of said first and second seals and said insulating tube comprises a thermoplastic elastomer.

45. (Original) An insulating boot according to Claim 39 further comprising an elastic body contained within said insulating tube for urging at least one of said first and second seals radially inward.

46. (Original) An insulating boot according to Claim 39 further comprising a sealant material within said insulating tube and between said first and second seals.

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47. (Original) An insulating boot according to Claim 39 further comprising a lubricant within said insulating tube.

48. (Currently amended) An insulating boot according to Claim 39 wherein said insulating tube further comprises a series of gripping rings on an interior of the open proximal end thereof.

49. (Original) An insulating boot for an electrical connector comprising a conductive body having at least one conductor receiving passageway therein to receive a conductor of at least one cable end, the insulating boot comprising:

an insulating tube having ~~[[a]]~~ an open proximal end to be [[positioned adjacent]] received onto the conductive body, a distal end opposite the proximal end, and a medial portion between the proximal and distal ends, said insulating tube comprising a continuous sidewall;

a first seal at the distal end of said insulating tube and being penetrable upon insertion of the cable end therethrough;

a second seal at the medial portion of said insulating tube and being penetrable upon insertion of the cable end therethrough; and

a sealant material within said insulating tube between said first and second seals.

50. (Original) An insulating boot according to

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Claim 49 wherein at least one of said first and second seals comprises a rupturable seal for initially closing said insulating tube.

51. (Original) An insulating boot according to Claim 49 wherein at least one of said first and second seals comprises a layer having a plurality of radially oriented lines of weakness therein.

52. (Original) An insulating boot according to Claim 49 wherein at least one of said first and second seals comprises a layer having a plurality of successive concentric rings of weakness therein.

53. (Original) An insulating boot according to Claim 49 wherein at least one of said first and second seals comprises a layer being puncturable and having a percentage elongation to yield of not less than about 300 percent.

54. (Original) An insulating boot according to Claim 49 wherein at least one of said first and second seals and said insulating tube comprises a thermoplastic elastomer.

55. (Original) An insulating boot according to Claim 49 further comprising an elastic body contained within said insulating tube for urging at least one of said first and second seals radially inward.

56. (Original) An insulating boot according to Claim 49 further comprising a lubricant within said insulating

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tube.

57. (Currently amended) An insulating boot according to Claim 49 wherein said insulating tube further comprises a series of gripping rings on an interior of the open proximal end thereof.

58. (Currently amended) An insulating boot for an electrical connector comprising a conductive body having at least one conductor receiving passageway therein to receive a conductor of at least one cable end, the insulating boot comprising:

an insulating tube having an open proximal end to be received onto the conductive body, said insulating tube comprising a continuous sidewall; and

at least one rupturable seal closing said insulating tube and rupturing upon initial insertion of the cable end therethrough;

said at least one rupturable seal also having a percentage elongation to yield of not less than about 300 percent to thereby be compliant to accommodate different sized cable ends and form a seal with adjacent portions of the cable end.

59. (Original) An insulating boot according to Claim 58 wherein said at least one rupturable seal comprises a layer having a plurality of radially oriented lines of weakness therein.

60. (Original) An insulating boot according to

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Claim 58 wherein said at least one rupturable seal comprises a layer having a plurality of successive concentric rings of weakness therein.

61. (Currently amended) An insulating boot according to Claim 58 wherein said at least one of rupturable seal is more compliant than the continuous sidewall said insulating tube.

62. (Original) An insulating boot according to Claim 58 wherein at least one of said insulating tube and said at least one rupturable seal comprises a thermoplastic elastomer.

63. (Original) An insulating boot according to Claim 58 further comprising a sealant material within said insulating tube.

64. (Original) An insulating boot according to Claim 58 further comprising a lubricant within said insulating tube.

65. (Currently amended) An insulating boot according to Claim 58 wherein said insulating tube further comprises a series of gripping rings on an interior of the open proximal end thereof.

66. (Currently amended) A method for making an electrical connector for at least one electrical cable end comprising a conductor and an insulating jacket thereover, the

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method comprising:

forming a conductive body having at least one conductor receiving passageway therein to receive the conductor of the at least one cable end, the conductive body also having at least one fastener receiving passageway intersecting the at least one conductor receiving passageway;

providing at least one fastener positioned in the at least one fastener receiving passageway for securing the conductor within the at least one conductor-receiving passageway; and

forming at least one insulating boot associated with the at least one conductor receiving passageway by forming an insulating tube having an open proximal end to be received onto the conductive body and comprising a continuous sidewall, and at least one rupturable seal closing the insulating tube and rupturing upon initial insertion of the cable end therethrough, the at least one rupturable seal also being compliant to accommodate different sized cable ends and forming a seal with adjacent portions of the insulating jacket.

67. (Original) A method according to Claim 66 wherein forming the at least one seal rupturable seal comprises forming a layer to have a plurality of radially oriented lines of weakness therein.

68. (Original) A method according to Claim 66 wherein forming the at least one rupturable seal comprises forming a layer to have a plurality of successive concentric rings of weakness therein.

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69. (Original) A method according to Claim 66 wherein forming the at least one rupturable seal comprises forming a layer to be puncturable and having a percentage elongation to yield of not less than about 300 percent.

70. (Currently amended) A method according to Claim 66 wherein forming the at least one rupturable seal comprises forming the at least one rupturable seal to be more compliant than the continuous sidewall of the insulating tube.

71. (Original) A method according to Claim 66 wherein forming the at least one insulating boot comprises forming the at least one insulating boot from a thermoplastic elastomer.

72. (Original) A method according to Claim 66 wherein forming the at least one insulating boot further comprises positioning an elastic body contained within the insulating tube for urging the at least one rupturable seal radially inward.

73. (Original) A method according to Claim 66 wherein forming the at least one insulating boot further comprises providing a sealant material within the insulating tube.

74. (Original) A method according to Claim 66 wherein forming the at least one insulating boot further comprises providing a lubricant within the insulating tube.

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75. (Currently amended) A method according to Claim 66 wherein forming the at least one rupturable seal comprises forming a first rupturable seal at [[a]] the distal end of the insulating tube, and forming a second rupturable seal at a medial portion of the insulating tube.

76. (Currently amended) A method according to Claim 75 wherein forming the first rupturable seal comprises connecting the first rupturable seal to the distal end of the insulating tube; and wherein forming the second rupturable seal comprises integrally molding the second rupturable seal with the continuous sidewall of the insulating tube.

77. (Original) A method according to Claim 75 wherein forming the at least one insulating boot further comprises providing a sealant material between the first and second rupturable seals.

78. (Currently amended) A method according to Claim 67 wherein forming the at least one insulating tube comprises forming a series of gripping rings on an interior of the open proximal end thereof.